

-16-

**ELECTRON MICROSCOPES EXHIBITING IMPROVED
IMAGING OF SPECIMEN HAVING CHARGEABLE BODIES**

Abstract of the Disclosure

5 Electron microscopes (*e.g.*, scanning electron microscopes, mapping SEMs)
are disclosed in which the amount of charging of the specimen is controlled to
between a minimum amount needed to view an image and a maximum amount
beyond which a viewable image cannot be obtained, and such that the image has low
distortion and the specimen is not damaged. Multiple irradiation-electron beams, or
10 multiple segments of a single irradiation-electron beam, are directed to a specimen
surface. The irradiation beams (or segments) are decelerated by a retarding voltage
applied by a cathode lens and are incident on the specimen surface. The respective
current and incident energy of each irradiation beam (or segment thereof) are
controlled independently to a predetermined relationship so as to impart
15 predetermined amounts of charging to different insulator regions of the specimen.